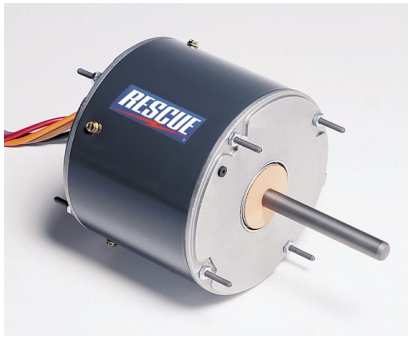
RESCUE™

Motors by Emerson



EMERSON™
Climate Technologies

Topics

- Overview
- How Does it Work?
- How Can it Help the Contractor?
- Connecting the Rescue™ Motor
- Questions
- Summary

EMERSON™
Climate Technologies

What is a RESCUE™ Motor?

- Universal Replacement Motor for Condenser Fan (Air Conditioner/Heat Pump) and Direct Drive Blower (Furnace/Blower) Applications
- Capable of Operating at Multiple Horsepower's
  - Condensing Applications
    - Catalog 5464 for 825 RPM , 1/3 to 1/6HP
    - Catalog 5462 for 1075 RPM, 1/3 to 1/6HP
    - Catalog 5465 for 1075 RPM, 1/2 to 1/5HP
  - 1/2 through 1/6HP in Blower Applications
    - Catalog Numbers 5460 and 5461
  - 3/4 through 1/5HP in Blower Applications
    - Catalog Numbers 5470 and 5471

Great Truck Stock Item!

EMERSON™
Climate Technologies

How does it work?

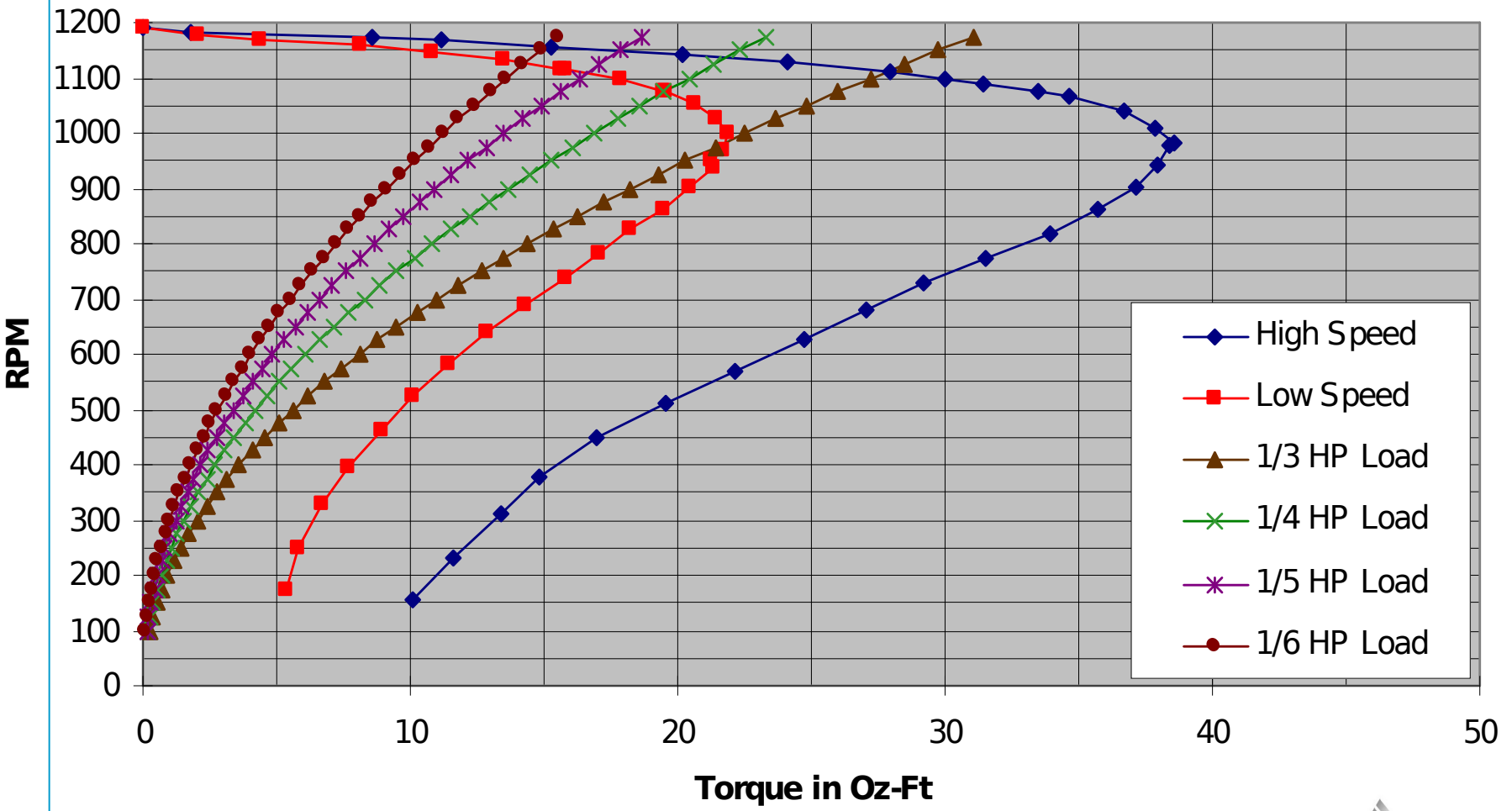
- Specially designed motors that are made to cover a range of HP applications
- The Windings (Speeds) are designed to match specific HP needs
  - Condenser Fan Motors – 2 windings per motor
  - Direct Drive Motors – 4 windings per motor
- There is more material (Copper & Iron) so that they do not over heat

How does it work?

- A Permanent Split Capacitor (PSC) Motor's output RPMs vary based upon the driven load.
  - Increases in loading can reduce the RPMs
  - Decreases in loading can increase the RPMs
- Incorrect output RPMs can lead to poor performance of the air conditioner or furnace, excessive noise, capacitor failure and overload conditions
- Rescue™ Motors ensure that the motor will deliver the correct output RPMs for the load provided.

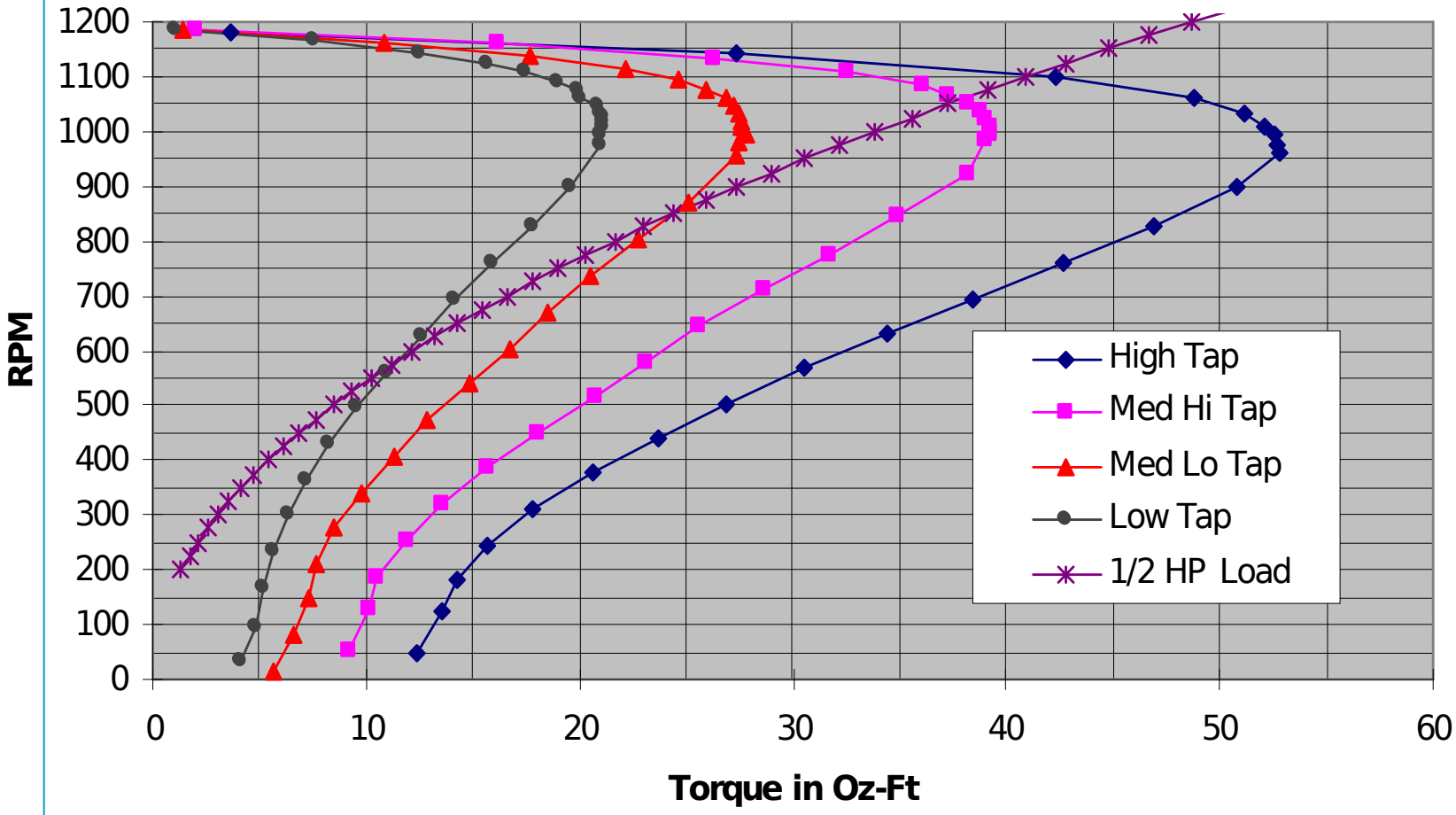
EMERSON™
Climate Technologies

Catalog 5462 5Mfd & 230 Volts



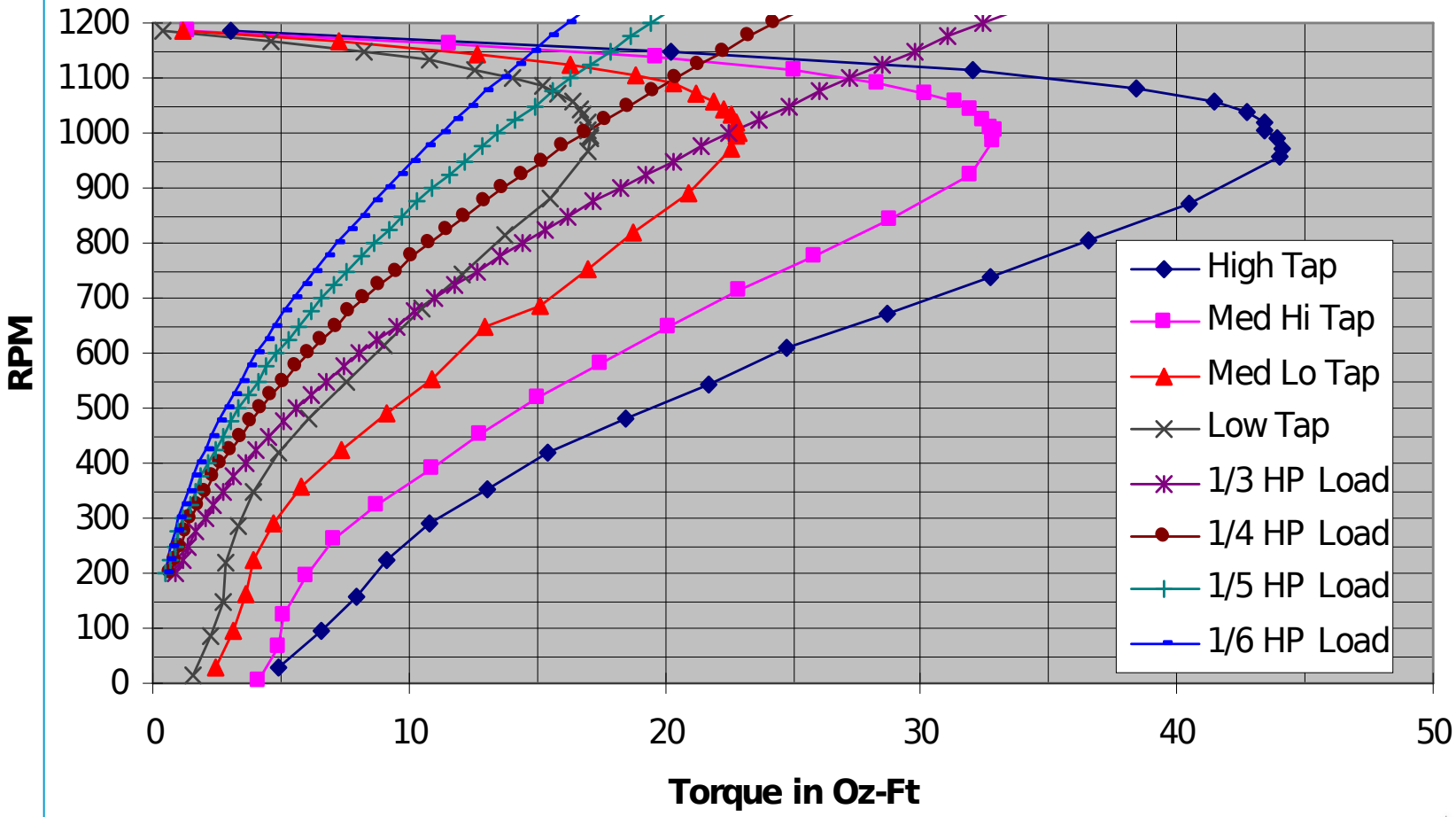
EMERSON
Climate Technologies

RESCUE 5460 With 10 Mfd



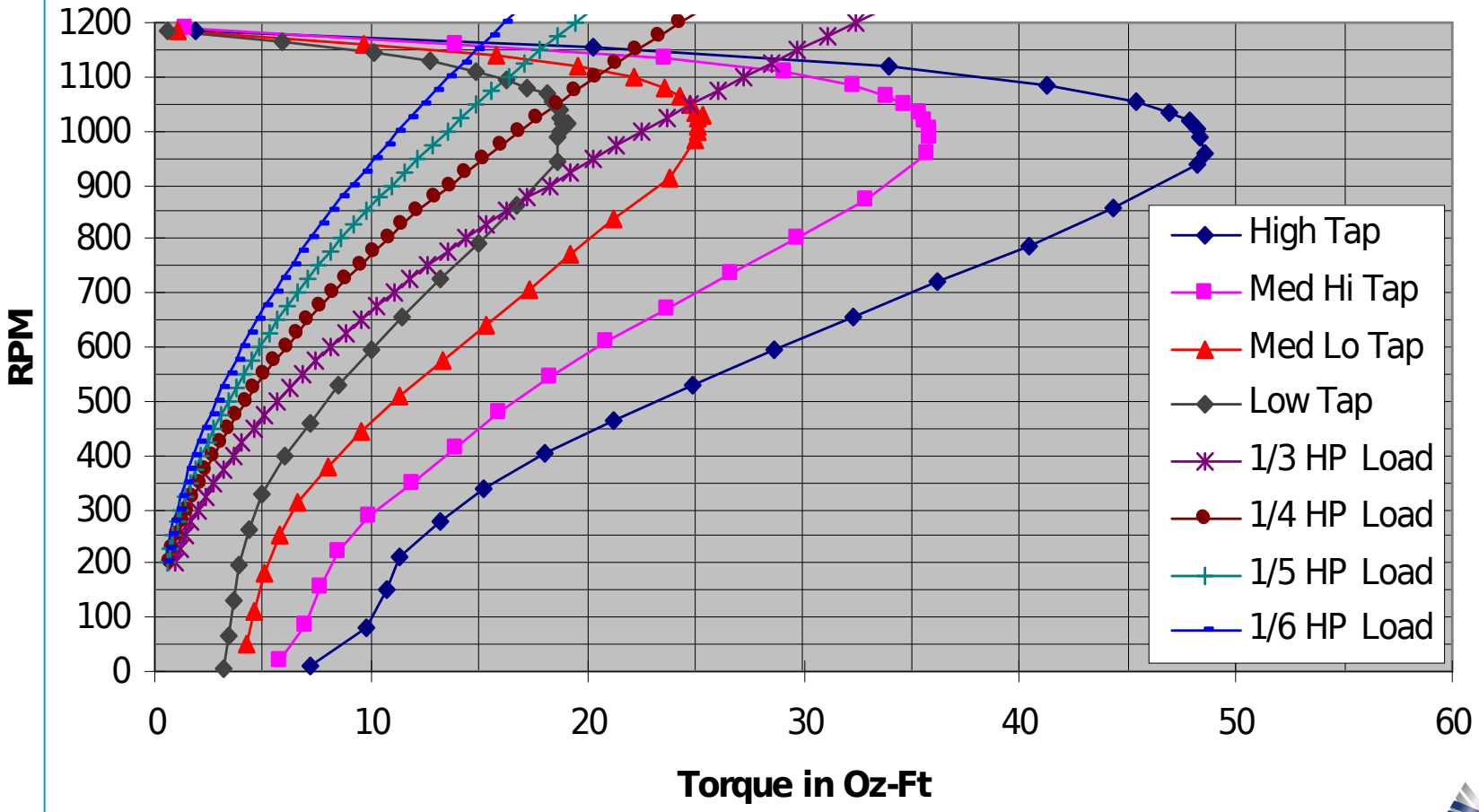
EMERSON
Climate Technologies

RESCUE 5460 With 5 Mfd



EMERSON
Climate Technologies

RESCUE 5460 With 7.5 Mfd



EMERSON
Climate Technologies

How does it help?

- I have the wrong motor on my truck!
  - Wrong horsepower!
  - Only an open condenser fan and I need a totally enclosed one!
  - No Rheem mounting holes!
- The Rescue™ motors can solve these problems!

EMERSON™
Climate Technologies

Why does the Contractor care?

Most like the “premium truck stock motor” concept:

- Having a motor that fits most applications
- Emerson to the “Rescue” when they are in need
- Reduces the need to wait on parts
- Homeowners do not want to pay for time to get parts
- Avoids the need for emergency openings
- Saving time = making more money!

EMERSON
Climate Technologies

Why does the Contractor care?

Some like to use them as their regular stock motors

- Combining several motors into a few
  - Condenser can replace 20 others
  - One Direct Drive can replace 5 others
- Reduces $ in motor inventory
- More room on truck for other equipment & parts
- Improved inventory turns = making more money!

EMERSON
Climate Technologies

Condenser Fans

- **How can one speed tap work for 2 HPs, 1/3 and 1/4 HP?**
  - The 1/3 HP winding just runs the ¼ hp load a little faster (1135 rpm)
  - When the fan and motor reach equilibrium the motor pulls fewer amps
- **Motors can be used in a 3 or 4 wire arrangement with capacitor**
  - Tape off brown w/ white stripe
- **Only Rescue CF motors are ball bearing !**

EMERSON
Climate Technologies

5462 Motor Replacement Flexibility (208-230V,1075RPM)

Catalog page 5

Mounting	1/6HP	1/5HP	1/4HP	1/3HP	1/2HP
Shaft Up	✓	✓	✓	✓	Use 5465
Shaft Down	✓	✓	✓	✓	Use 5465
Stud Mount	✓	✓	✓	✓	Use 5465
Band Mount	✓	✓	✓	✓	Use 5465
Holes Mount	✓	✓	✓	✓	Use 5465

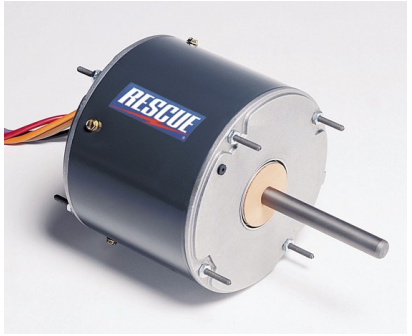
One Motor: 5462 Replaces Twenty Ratings!

EMERSON™
Climate Technologies

Condenser Fan Motors 5462

Key Features

- Operable at Multiple Horsepower's (See Chart Below)
- Permanent Split Capacitor (PSC) Design
- Totally Enclosed Air Over Design (TEAO)
- Automatic Thermal Protector
- Ball Bearings
- Reversible Rotation
- 36 Inch Leads
- All Angle Mounting
- Mounts by Thru-bolts, Belly Band, or Four Holes in the Shell
- 60 degree Celsius Ambient Rated



Motor to Replace	Speeds to Use* (Color/RPM)	Capacitor to Use on 230V	FLA
1/3 HP	High (Black/1110)	5 mfd***	2.6
1/4 HP	High (Black/1135)	5 mfd***	2.5
1/5 HP	Low (Red/1110)	5 mfd***	2.0
1/6 HP	Low (Red/1125)	5 mfd***	1.8

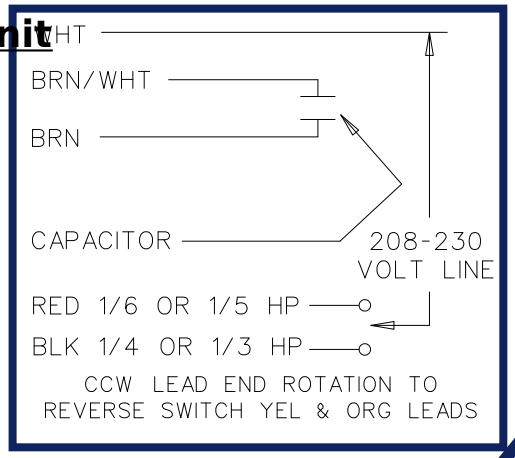
* RPM data from cold motor at nominal horsepower. Actual load will determine effective RPM.

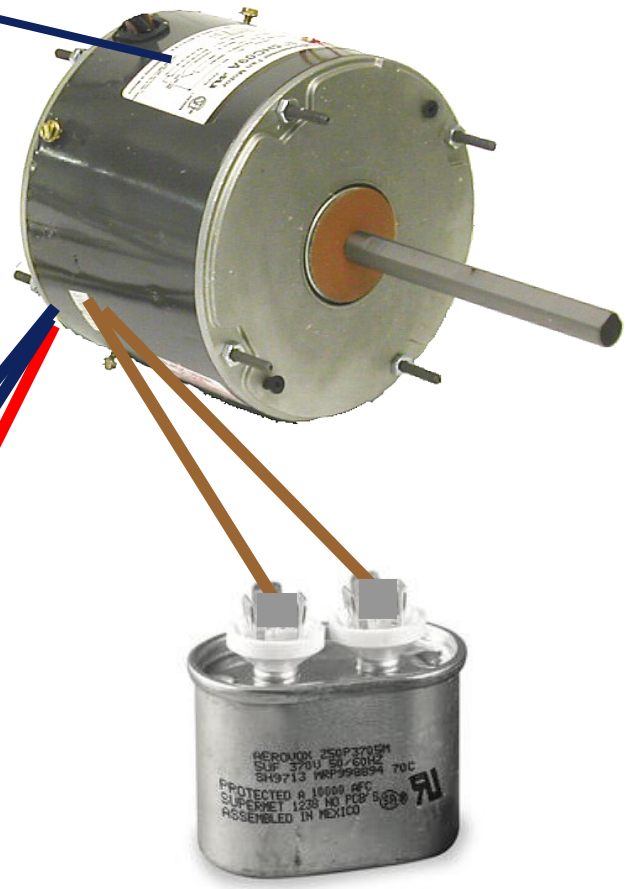
***Note: at 208V a 7.5 mfd/370V capacitor should be used. Amps will be similar.

EMERSON™
Climate Technologies

Condenser Fan – 5462
1/3HP, Black (Fan), Red (Not Used)

DP Contactor in Condensing Unit





Capacitor Required: 5 or 7.5 mfd

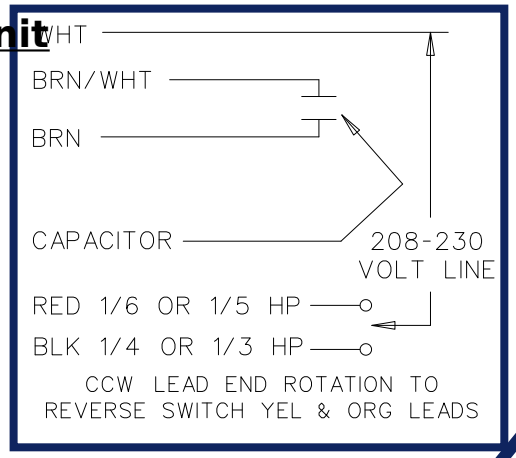
Usable Number of Speeds: 1

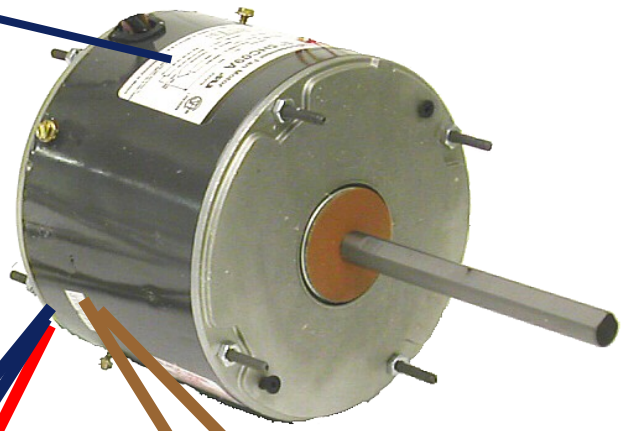
Approx. Cooling Speed (High) RPMs: 1110

EMERSON
Climate Technologies

Condenser Fan – 5462
1/4HP, Black (Fan), Red (Not Used)

DP Contactor in Condensing Unit





Capacitor Required: 5 or 7.5 mfd

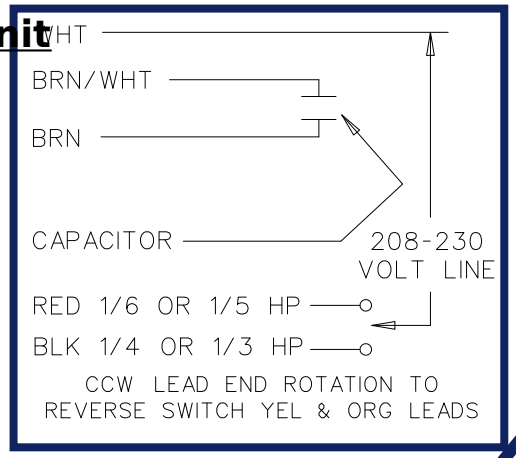
Usable Number of Speeds: 1

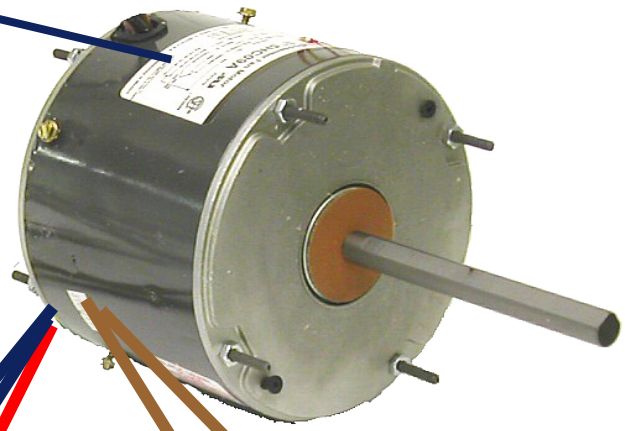
Approx. Cooling Speed (High) RPMs: 1135

EMERSON™
Climate Technologies

Condenser Fan – 5462
1/5HP, Red (Fan), Black (Not Used)

DP Contactor in Condensing Unit





Capacitor Required: 5 or 7.5 mfd

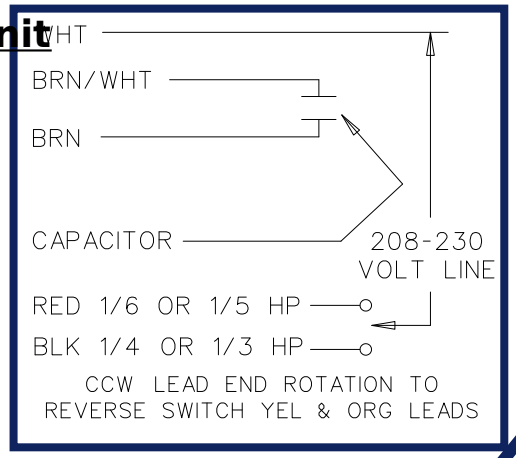
Usable Number of Speeds: 1

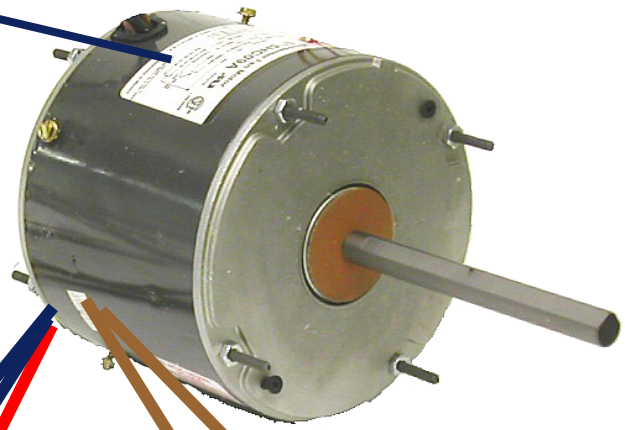
Approx. Cooling Speed (High) RPMs: 1110

EMERSON™
Climate Technologies

Condenser Fan – 5462
1/6HP, Red (Fan), Black (Not Used)

DP Contactor in Condensing Unit





Capacitor Required: 5 or 7.5 mfd

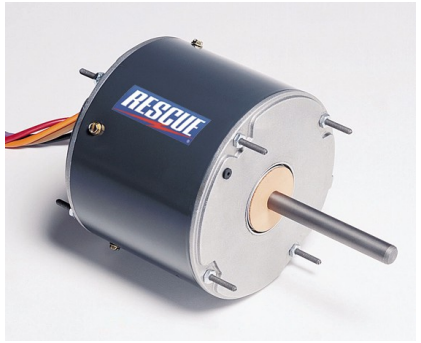
Usable Number of Speeds: 1

Approx. Cooling Speed (High) RPMs: 1125

EMERSON™
Climate Technologies

Condenser Fans

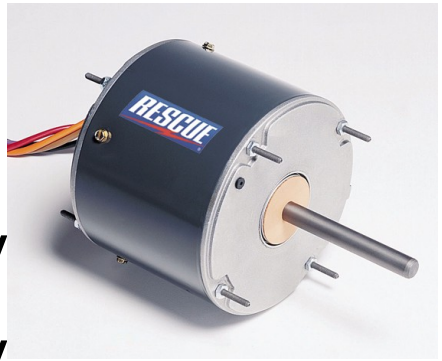
- **825 RPM 1/3 to 1/6 HP Cat# 5464**
  - Use High (black) for 1/3 & 1/4 HP
  - Use Low (red) for 1/5 & 1/6 HP
  - 7.5 mfd / 370V capacitor @ 230V
  - 10.0 mfd / 370V capacitor @ 208V
  - TEAO, 60C rated, Rheem Side Holes, Reversible
  - All Position Mount, Extended Studs, Ball Bearing



EMERSON
Climate Technologies

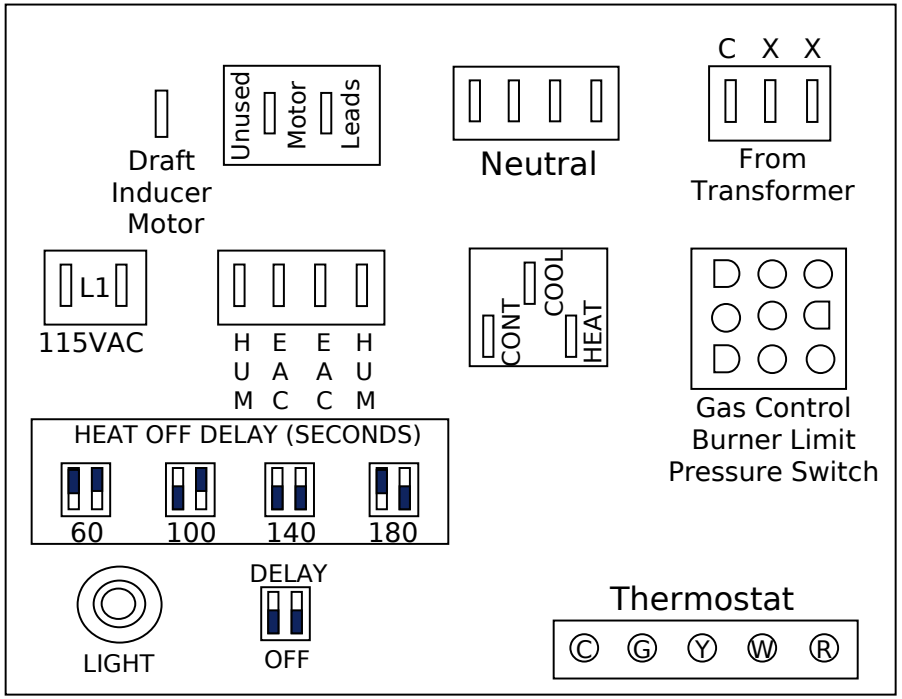
Condenser Fans

- **1075 RPM 1/2 to 1/5 HP Cat# 5465**
  - Use High (black) for 1/2 & 1/3 HP
  - Use Low (red) for 1/4 & 1/5 HP
  - 10.0 mfd / 370V capacitor @ 230V
  - 12.5 mfd / 370V capacitor @ 208V
  - TEAO, 60C rated, Rheem Side Holes, Reversible
  - All Position Mount, Extended Studs, Ball Bearing



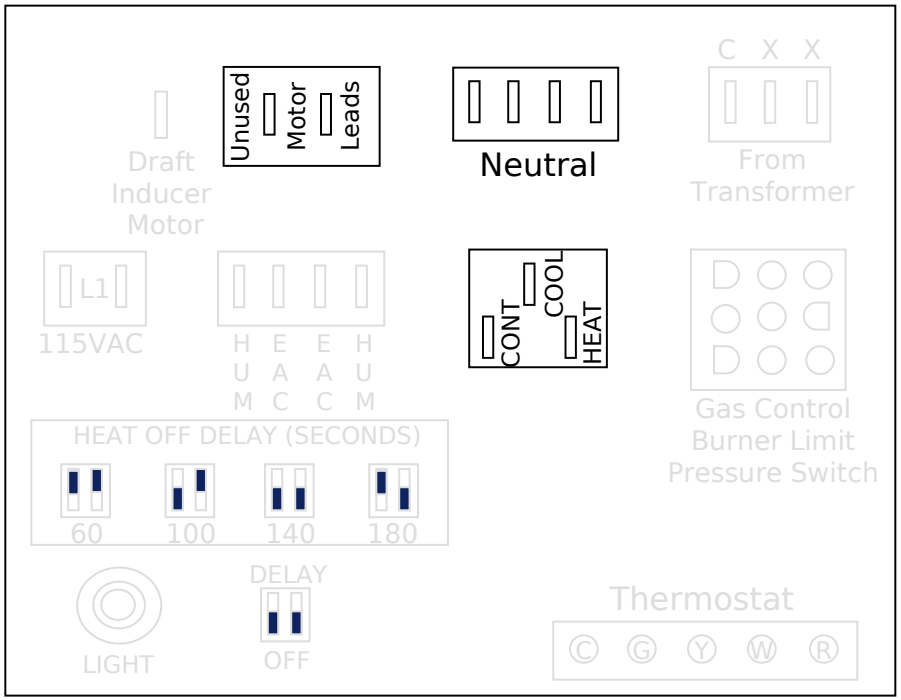
EMERSON
Climate Technologies

Furnace/Blower Application Typical Connection Configuration



EMERSON
Climate Technologies

Furnace/Blower Application Relevant Connections for Motors



EMERSON
Climate Technologies

Direct Drive Blower Motors 5460 & 546

Key Features

- Operable at Multiple Horsepower's (See Below)
- Permanent Split Capacitor (PSC) Design
- Open Air Over Design (OPAO)
- Automatic Thermal Protector
- Self - Aligning Sleeve Bearing
- Reversible Rotation
- 36 Inch Leads
- All Angle Mounting
- Mounts by Thru-bolts, Belly Band, or Eight Holes in the Shell for Brackets

Motor to Replace	Speeds to Use* (Color/Approx. RPM)		370VAC Capacitor to Use	5460 115V FLA	5461 208-230V FLA
	Cooling	Heating			
1/2 HP	High (Black/1100)	Med-Hi (Blue/1050) or Med-Low (Yellow/825)	10 mfd	7.3	3.6
1/3 HP	High (Black/1120)	Med-Hi (Blue/1090) or Med-Low (Yellow/1030)	5 mfd**	6.9	3.5
1/4 HP	Med-Hi (Blue/1125)	Med-Low (Yellow/1090) or Low (Red/1010)	5 mfd**	5.5	2.8
1/5 HP	Med-Low (Yellow/1110)	Low (Red/1060)	5 mfd**	3.6	1.9
1/6 HP	Low (Red/1060)	Low (Red/1060)	5 mfd**	2.8	1.3

* RPM data from cold motor at nominal horsepower. Actual load will determine effective RPM

** Using a 7.5 mfd/370VAC capacitor will result in an approximately 10% stronger motor. This can be used where there is more airflow needed.

EMERSON™
Climate Technologies

Direct Drive Blower Motors 5470 & 5471

Key Features

- Operable at Multiple Horsepower's (See Below)
- Permanent Split Capacitor (PSC) Design
- Open Air Over Design (OPAO)
- Automatic Thermal Protector
- Ball Bearings
- Reversible Rotation
- 36 Inch Leads
- All Angle Mounting
- Mounts by Thru-bolts, Belly Band, Resilient Rings or Eight Holes in the Shell for Brackets

Motor to Replace	Speeds to Use* (Color/Approx. RPM)		370VAC Capacitor to Use	5470 115V FLA	5471 208-230V FLA
	Cooling	Heating			
3/4 HP	High (Black/1110)	Med-Hi (Blue/1080) or Med-Low (Yellow/1010)	20 mfd	8.1	3.8
1/2 HP	High (Black/1130)	Med-Low (Yellow/1090) or Low (Red/1035)	10 mfd	6.6	3.7
1/3 HP*	Med-Hi (Blue/1150)	Med-Low (Yellow/1130) or Low (Red/1110)	10 mfd	4.6	2.5
1/4 HP*	Med-Low (Yellow/1150)	Low (Red/1130)	10 mfd	3.8	1.8
1/5 HP*	Low (Red/1140)	Low (Red/1140)	10 mfd	3.1	1.7

EMERSON
Climate Technologies

5460 Rescue Motor Example

Scenario: 1/3 HP, 115V, Furnace Blower Motor fails and needs replacement. Contractor Joe stocks a Rescue 5460. Contractor Tom stocks a standard 1/3 HP 3-Speed Furnace Blower Motor 1864.

Mode	Output RPMs: Joe – 5460	Output RPMs: Tom – 1864
Cooling	1120 (Black)	1130
Heating	1030 (Yellow)	1030
Continuous	1120 (Black)	1130

90 RPMs

100 RPMs

Both Motor Replacements Work!

EMERSON™
Climate Technologies

5460 Rescue Motor Example

Scenario: 1/4 HP, 115V, Furnace Blower Motor fails and needs replacement. Contractor Joe stocks a Rescue 5460. Contractor Tom stocks a standard 1/3 HP 3-Speed Furnace Blower Motor 1864.

Mode	Output RPMs: Joe – 5460	Output RPMs: Tom – 1864
Cooling	1125 (Blue)	1185
Heating	1010 (Red)	1175
Continuous	1125 (Blue)	1185

115 RPMs

10 RPMs

Rescue motor works. Standard Motor Does Not Deliver Much Speed Separation, Under Loading Can Lead to Capacitor Failure and

EMERSON
Climate Technologies

5460 Rescue Motor Example

Scenario: 1/2 HP, 115V, Furnace Blower Motor fails and needs replacement. Contractor Joe stocks a Rescue 5460. Contractor Tom stocks a standard 1/3 HP 3-Speed Furnace Blower Motor 1864.

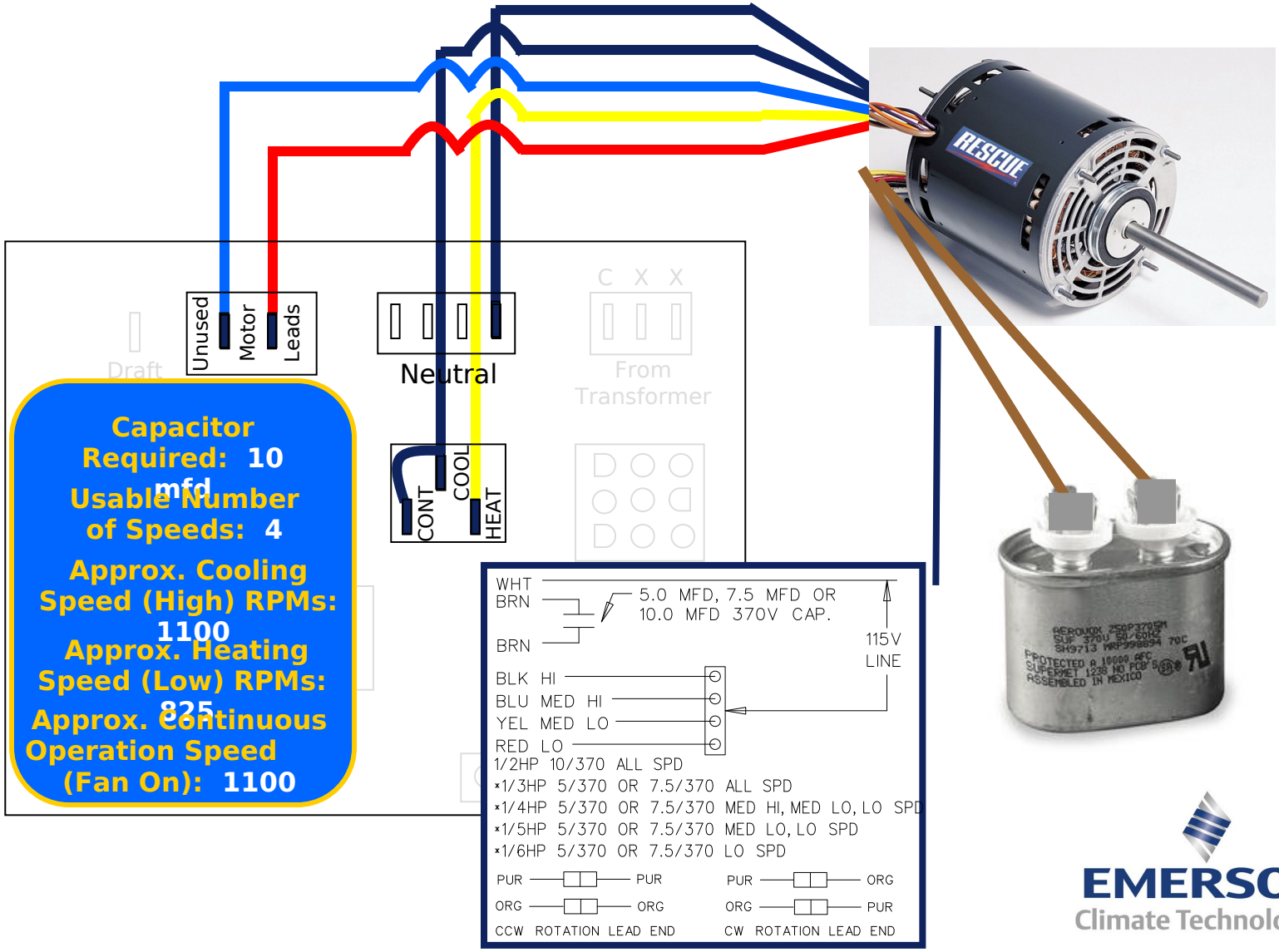
Mode		Output RPMs: Joe – 5460	Output RPMs: Tom – 1864
Cooling	50 or 275 RPMs	1100 (Black)	Overload
Heating	50 or 275 RPMs	1050 (Blue) or 825 (Yellow)	Overload
Continuous		1000 (Black)	Overload

Rescue Motor Works, Standard Motor Does Not Deliver the Required Horsepower!

EMERSON™
Climate Technologies

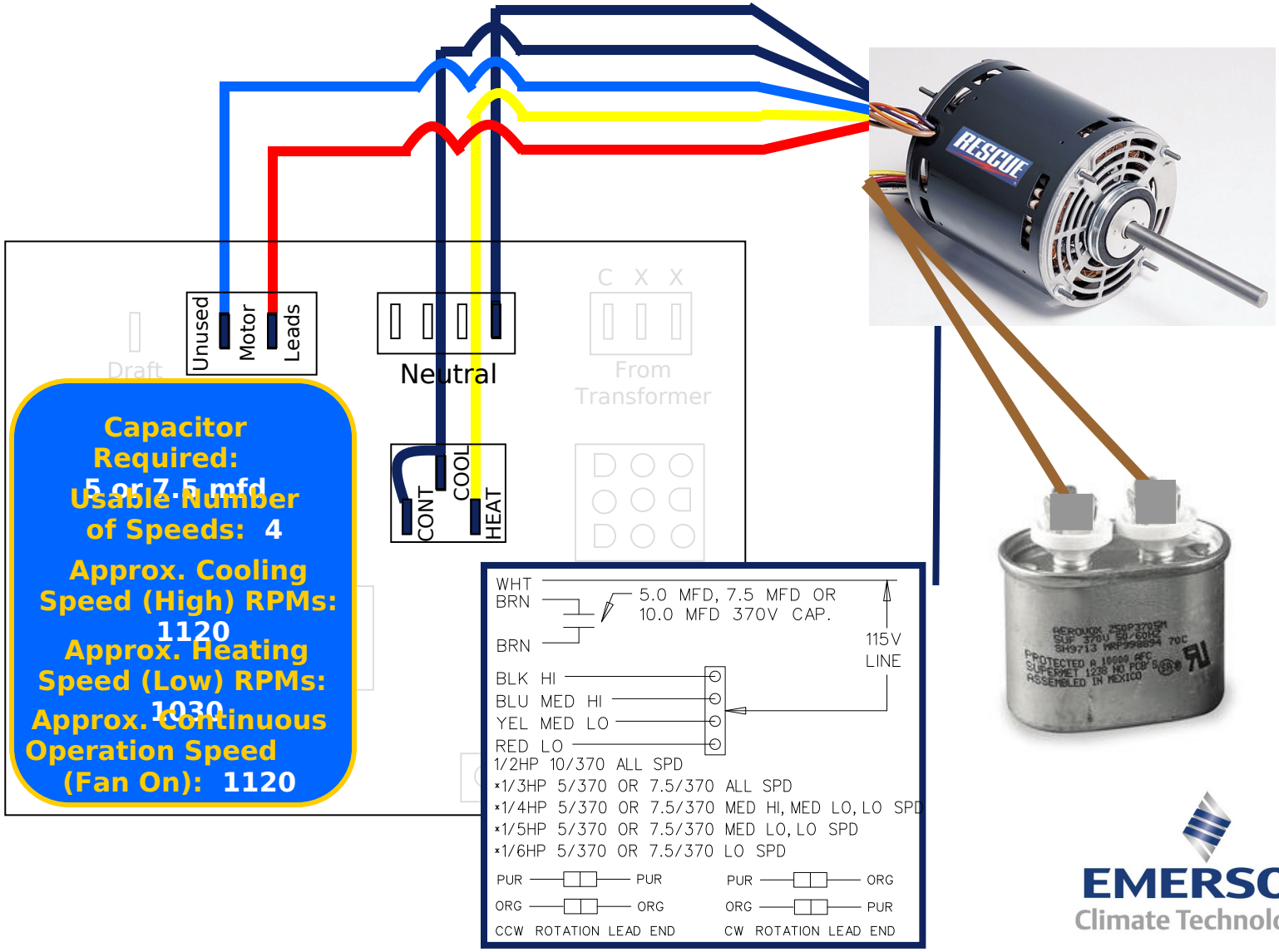
Direct Drive Blower – 5460 and 5461

1/2HP, Black (Cooling), Yellow (Heat), Black (Fa



EMERSON
Climate Technologies

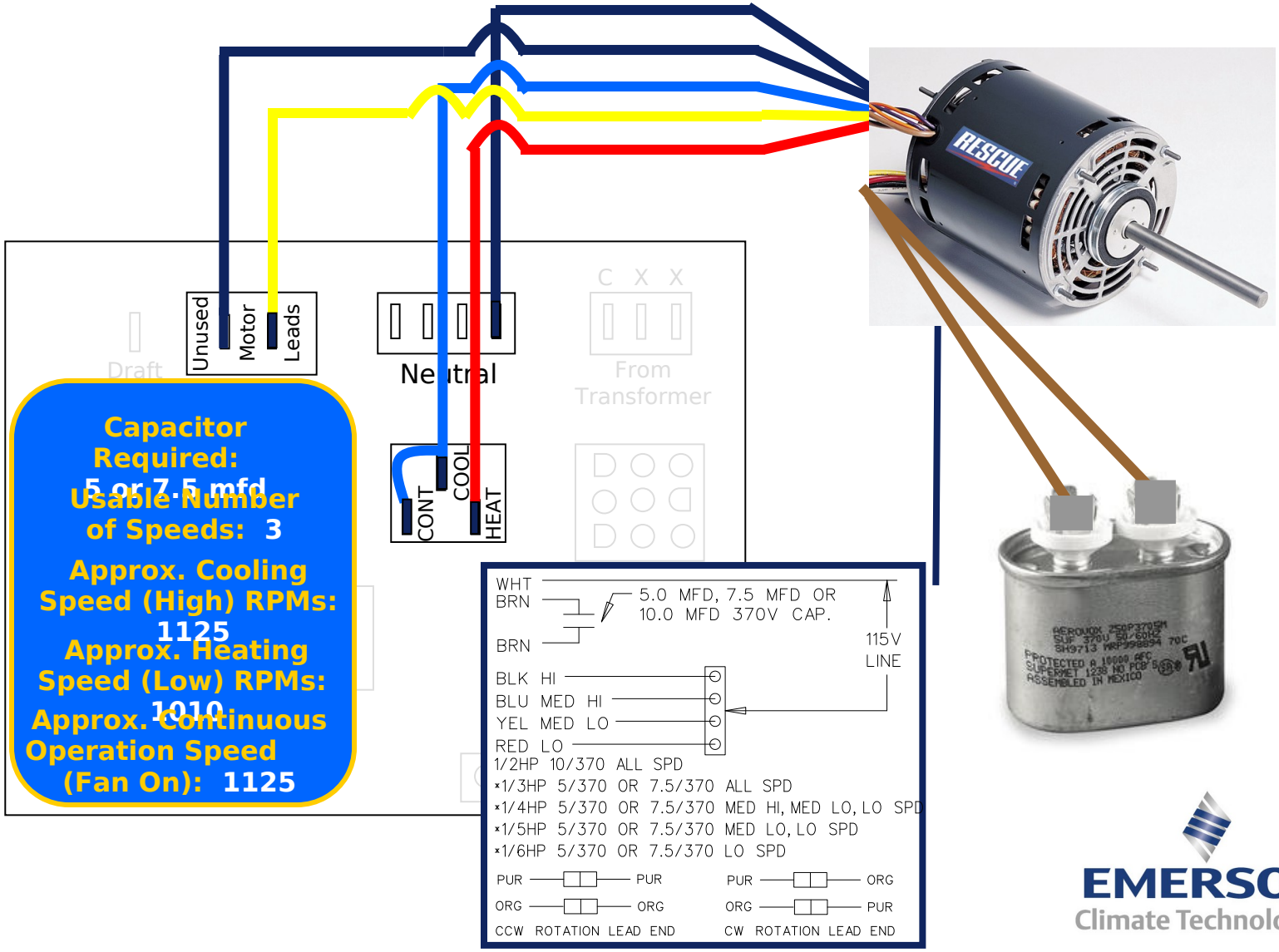
Direct Drive Blower – 5460 and 5461
/3HP, Black (Cooling), Yellow (Heat), Black (Fa



EMERSON
Climate Technologies

Direct Drive Blower – 5460 and 5461

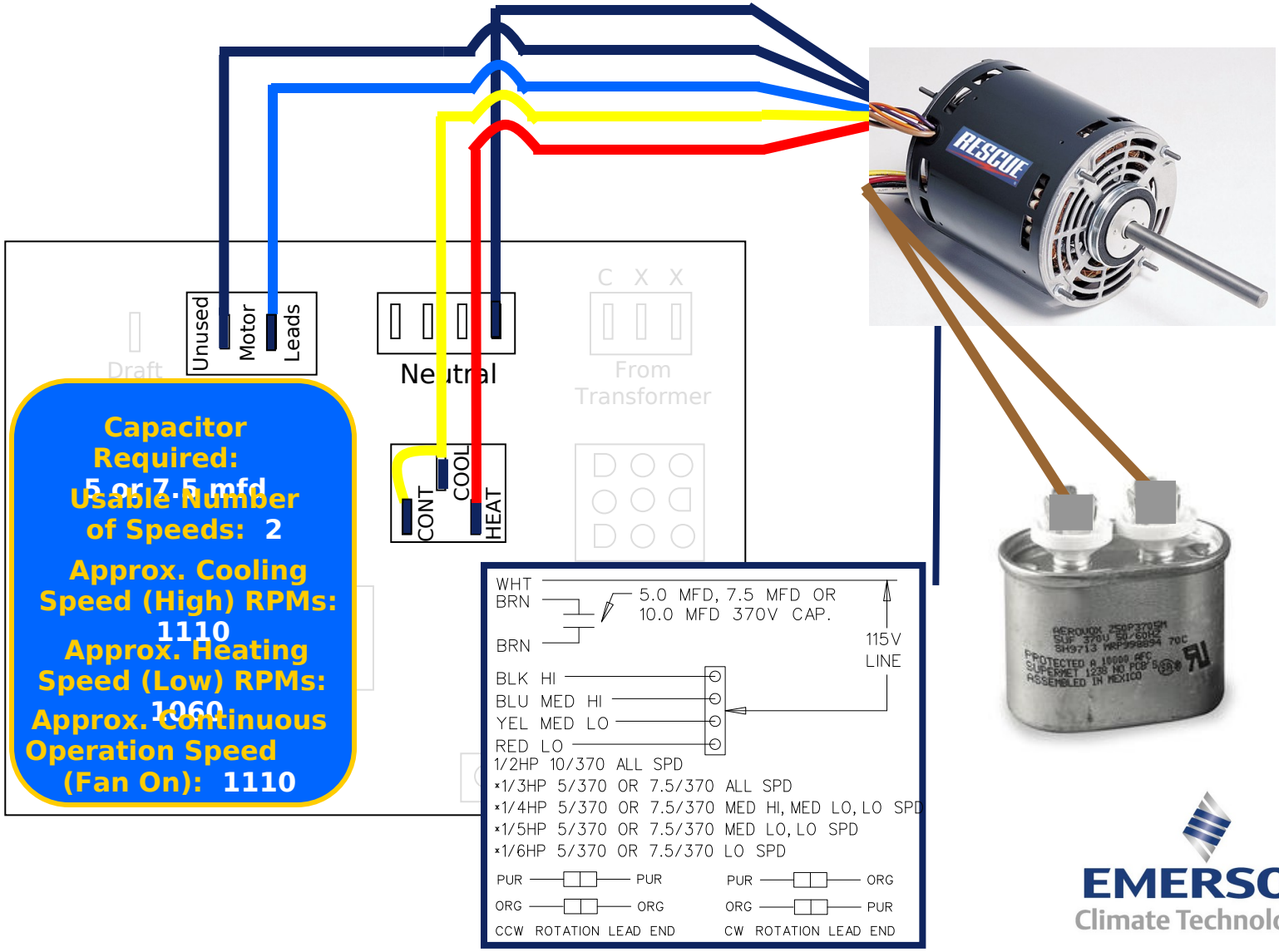
1/4HP, Blue (Cooling), Red (Heat), Blue (Fan)



EMERSON
Climate Technologies

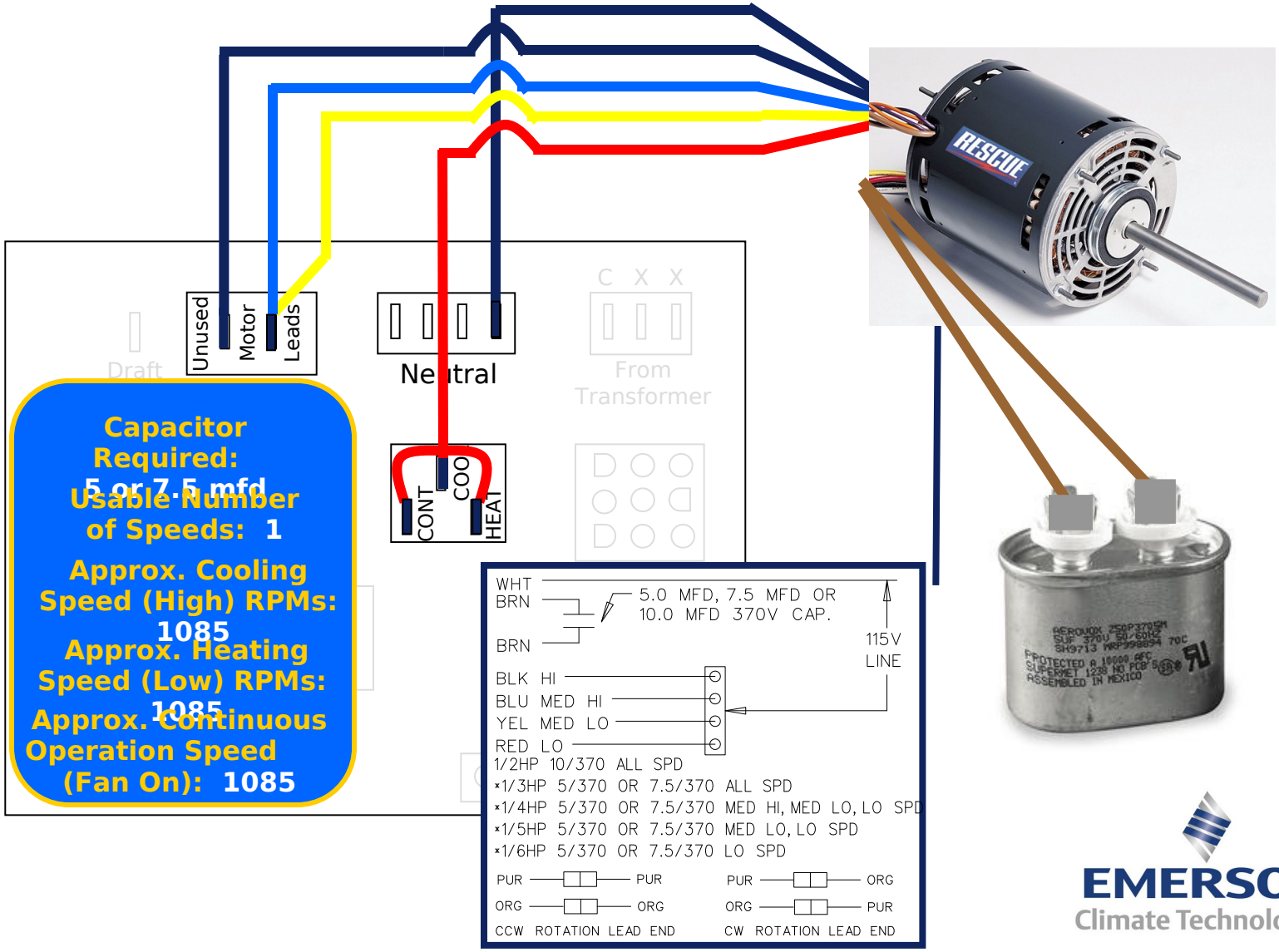
Direct Drive Blower – 5460 and 5461

/5HP, Yellow (Cooling), Red (Heat), Yellow (Fa



EMERSON
Climate Technologies

Direct Drive Blower – 5460 and 5461
1/6HP, Red (Cooling), Red (Heat), Red (Fan)



EMERSON
Climate Technologies

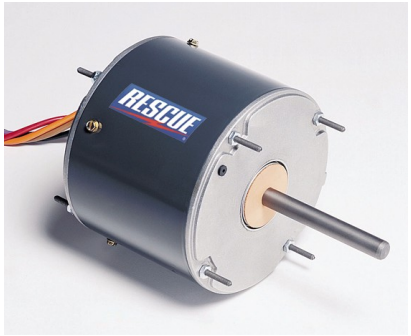
Direct Drive Questions

- How are they different from other Direct Drives?
  - Most Direct Drives have a big gap in between the high and low speeds.
  - Rescue's have 4 speeds that are matched up to specific HP needs, to give you the right strength.
  - Standard motors would not give you the correct speeds if you tried this with them. (Due to speed/HP spacing)
- What about large Heil & Lennox ½ HP 115V DDBs at ~7.8 Amps?
  - OEM motors are accurate on amps, they can say anything on HP
  - So, don't use a Cat# 5460 @ 7.3 amps, use new Cat# 5470 with 8.1 amps.

EMERSON
Climate Technologies

Industry Leading Replacement Motors
Rescue™ Multi-HP Motors

- Multi-Horsepower Motors



- Benefits for the Contractor
  - Saves Time
  - Increased Efficiency
  - Cost and Hassle Avoidance
  - Financial Benefits

Seven motors can replace over 100 configurations - use those that fit your needs!

EMERSON™
Climate Technologies